

IN THE CLAIMS

Please amend the claims as follows:

1. (original) A multicast communication path calculation method for obtaining multicast paths from a given source node to a plurality of destination nodes in a network including a plurality of nodes, the method comprising the steps of:

obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network;

selecting, as candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths;

for each of the candidate nodes, calculating minimum delay paths from the candidate node to each of the destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;

selecting, as the rendezvous point node, the candidate node for which the difference is smallest among differences for all of the candidate nodes; and

outputting, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each destination node.

2. (original) The multicast communication path calculation method as claimed in claim 1, wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes.

3. (original) A multicast communication path setting method, wherein a multicast communication path calculation apparatus calculates multicast paths from a given source

node to a plurality of destination nodes in a network including a plurality of nodes, and a multicast communication path setting apparatus establishes the calculated multicast paths on the network, wherein the multicast communication path setting apparatus sends a request to calculate the multicast paths to the multicast communication path calculation apparatus, and the multicast communication path calculation apparatus calculates the multicast paths according to the request by using a method comprising the steps of:

obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network;

selecting, as candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths;

for each of the candidate nodes, calculating minimum delay paths from the candidate node to each of the destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;

selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for all of the candidate nodes; and

outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each destination node,

wherein the multicast communication path calculation apparatus sends the output results to the multicast communication path setting apparatus, and the multicast communication path setting apparatus establishes the multicast paths according to the output results.

4. (original) The multicast communication path setting method as claimed in claim 3, wherein each node in the network measures traffic state of the network and sends the measurement results to the multicast communication path calculation apparatus, and the multicast communication path calculation apparatus calculates the multicast paths according to the measurement results.

5. (original) A multicast communication path calculation apparatus for obtaining multicast paths from a given source node to a plurality of destination nodes in a network including a plurality of nodes, the apparatus comprising:

a part for obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network;

a part for selecting, as candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths;

a part for calculating, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtaining, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;

a part for selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for all of the candidate nodes; and

a part for outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes.

6. (original) The multicast communication path calculation apparatus as claimed in claim 5, wherein the minimum delay path on which the candidate nodes exist is one having

maximum delay among minimum delay paths from the source node to each of the destination nodes.

7. (original) The multicast communication path calculation apparatus as claimed in claim 5, further comprising:

a part for receiving the topology information and the delay information of the network; and

a part for storing the received information in a recording medium,
wherein the multicast communication path calculation apparatus calculates the multicast paths by reading the received information from the recording medium.

8. (original) The multicast communication path calculation apparatus as claimed in claim 5, further comprising a part for including the output results in a multicast path setting control message, and sending the multicast path setting control message over the multicast paths indicated by the output results.

9. (original) The multicast communication path calculation apparatus as claimed in claim 5, further comprising:

a part for receiving a request to calculate the multicast paths from a multicast communication path setting apparatus; and

a part for sending the output results to the multicast communication path setting apparatus.

10. (original) A computer program for causing a multicast communication path calculation apparatus to calculate multicast paths from a given source node to a plurality of

destination nodes in a network including a plurality of nodes, the computer program comprising:

program code means for obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network;

program code means for selecting, as candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths;

program code means for calculating, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtaining, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;

program code means for selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for each of the candidate nodes; and

program code means for outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes.

11. (original) The computer program as claimed in claim 10, wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes.

12. (original) A computer readable medium storing program code for causing a multicast communication path calculation apparatus to calculate multicast paths from a given source node to a plurality of destination nodes in a network including a plurality of nodes, the computer readable medium comprising:

program code means for obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network;

program code means for selecting, as candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths;

program code means for calculating, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtaining, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;

program code means for selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for all of the candidate nodes; and

program code means for outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes.

13. (original) The computer readable medium as claimed in claim 12, wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes.

14-22. (canceled)